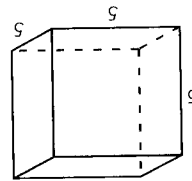


## Take Another Look 9.7

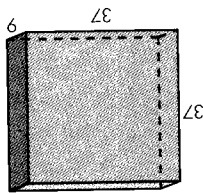
- Use algebra to show that the total surface area of a cone is given by the expression  $\pi r(l + r)$ , where  $l$  represents slant height and  $r$  represents radius.
- In Examples A-C in this lesson, you found the surface area of a prism, a pyramid, and a cylinder without using surface area formulas. Instead you used formulas for polygons and circles to find the areas of the different surfaces that made up each solid, then you added those areas to find the total surface area. For the cone, you derived a formula for the lateral surface area. Look back at Examples A-C to see if you can derive a single formula for the total surface area of each solid. Use algebra to make your formulas as simple as possible. (In other words, use as few variables as possible and combine as many terms as possible.) Try each formula on an example of your own making.

## Exercise Set 9.7

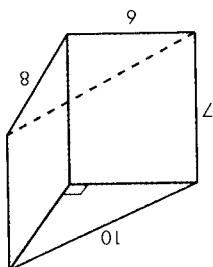
In Exercises 1-10, find the surface area for each solid. All quadrilaterals are rectangles. All given measurements are in centimeters.



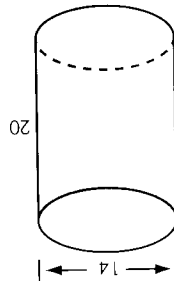
1.



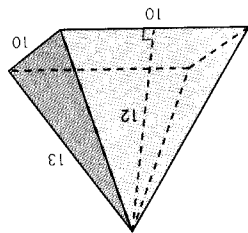
2.



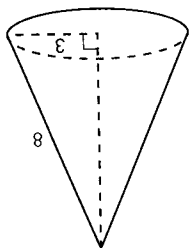
3.



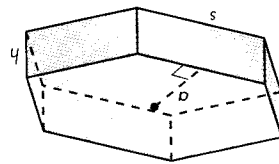
4. Round your answer to the nearest  $\text{cm}^2$ .



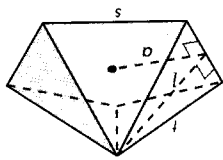
5. The base is a square.



- 6.\* Round your answer to the nearest  $\text{cm}^2$ .

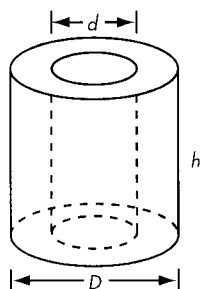


- 7.\* The base is a regular hexagon with apothem  $a \approx 12.1$  and side  $s \approx 14$ . Each lateral face is a rectangle with height  $h = 7$ .

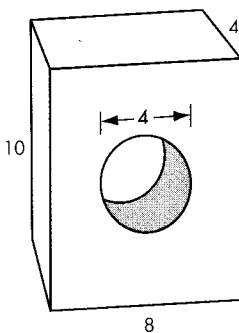


- 8.\* The base is a regular pentagon with apothem  $a \approx 11$  and side  $s \approx 16$ . Each lateral edge  $l \approx 17$ , and the height of a face  $l \approx 15$ . Give your answer to the nearest  $\text{cm}^2$ .

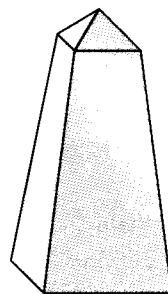
- 9.\*  $D = 8, d = 4, h = 9$



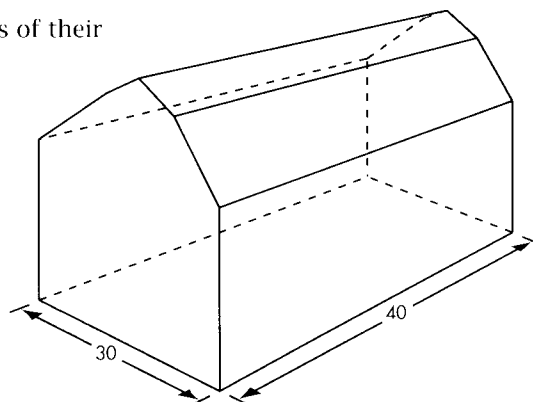
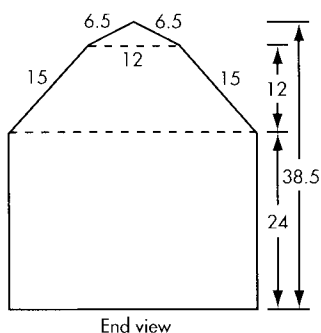
- 10.\* Round your answer to the nearest  $\text{cm}^2$ .



11. Explain how you would find the surface area of an obelisk.



- 12.\* Claudette and Marie are about to paint the exterior walls of their country farm home (all vertical surfaces) and to put new cedar shingles on the roof. Their home has a gambrel roof typical of the houses of rural gentry back in their home country, France. The paint selected costs \$25 per gallon and covers 250 square feet per gallon.



The wood shingles cost \$65 per bundle, and each bundle covers 100 square feet. How much will this home improvement cost Claudette and Marie? All measurements are in feet.

13. The shape of the spinning dishes this Sri Lankan dancer is balancing are called **frustrums** of cones. Think of them as cones with their tops cut off. Use your compass to draw onto a sheet of paper pieces that you can cut out and tape together to form a frustrum of a cone.
14. A circular oil spill at 6 a.m. has a radius of 1.0 kilometer. By 7 a.m., the radius of the spill is 1.5 kilometers. By 8 a.m., the radius of the spill is 2.0 kilometers. At this rate, what will be the area of the oil spill if it's not contained by noon?
- 15.\* Cycle City occupies a circular region 8 km in diameter. Two civil defense sirens are to be installed—one 2 km to the east of the center of the city and the other 2 km to the west of the center. If the sound from each siren will travel up to 2 km, what percent of the city will be covered by the sound of the sirens?

